

1 ABSTRACT OF THE DISCLOSURE

2 An etch stop layer is formed over a surface of an interlayer insulating layer
3 and over a surface of a conductive plug extending at a depth from the surface of the
4 interlayer insulating layer. A lower mold layer is deposited over the etch stop layer,
5 and a wet etch rate of the lower mold layer is adjusted by adding dopants to the
6 lower mold layer during formation of the lower mold layer, and by annealing the
7 lower mold layer. An upper mold layer is then deposited over the surface of the
8 lower mold layer, such that a wet etch rate of the upper mold layer is less than the
9 adjusted wet etch rate of the lower mold layer. The upper mold layer, the lower
10 mold layer and the etch stop layer are then subjected to dry etching to form an
11 opening therein which exposes at least a portion of the surface of the contact plug.
12 Then a wet etching of the upper mold layer and the lower mold layer is performed so
13 as to increase a size of the opening at the lower mold layer and so as to expose a
14 surface portion of the etch stop layer adjacent the surface of the conductive plug. A
15 conductive material is then deposited over the surface of the opening in the upper
16 and lower mold layers to define a capacitor electrode.